ABSTRACT OF THE DISCLOSURE

A garbage collector employs a plurality of task queues for a parallel-execution operation in a garbage-collection cycle. Each task queue is associated with a different ordered pair of the threads that perform the parallel-execution operation in parallel. One of the threads, referred to as that task queue's "enqueuer" thread, is the only one that can "push" onto that queue an identifier of a dynamically identified task. The other thread, referred to as that task queue's "dequeuer," is the only one that can "pop" tasks from that task queue for execution. Since, for each task queue, there is only one thread that can "push" task identifiers on to it and only one thread that can "pop" task identifiers from it, the garbage collector can share dynamically identified tasks optimally among its threads without suffering the cost imposed by making combinations of otherwise separate machine instructions atomic.